

Careers & Trends in Welding

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American Welding Society





Fostering partnerships and pathways to educate the advanced manufacturing workforce.



CT State Colleges & Universities and College of Technology

- Working with Office of Workforce Strategies and Governor's Workforce Council and participating in Regional Sector Partnerships to meet their workforce development goals and objectives
- Regular participation in industry association initiatives (e.g. CT Manufacturers' Collaborative) and educational advisory meetings (e.g. CT Technical Education & Career System)
- Developing strategic plan for community college manufacturing programs to address the need manufacturing employees

Industry-Driven Curriculum

- College of Technology (COT) Site Coordinators Council
- Stackable Credential Model-driven by industry and workforce
- Career Pathways
- Microcredentials, Certificates, A.S. Degrees through Community Colleges with partnerships with secondary schools
- Oversees Community College Engineering and Technology Curriculum including all Manufacturing certificates and degrees
- Prepares Students for Immediate Employment as well as seamless transfer to four-year colleges/universities as juniors
- Address the recruitment and retention of underrepresented populations
- Programs include:
 - Mechatronics
 - Machine Technology
 - Welding,
 - Electronics Technology
 - Electro-Mechanical Maintenance
- Programs are added and modified in response to industry needs



Researching
Developing
Training and Educating
Dissemination
Mentoring
Consulting
Partnerships
Deploying

Preparing the Next Gen
Manufacturing Workforce



Fostering partnerships and pathways to educate the advanced manufacturing workforce.



National Science Foundation Funding

- Recognizes infrastructure of COT as a national model
- First funded in 2004 to establish the Regional Center for Next Generation Manufacturing
- Four rounds of funding including award in 2018 to create a National Resource Center for Next Generation Manufacturing
- In 2021, NSF awarded the COT \$7.5M for a National Center for Next Generation Manufacturing – Focus on Industry 4.0
- Focus on professional development for educators and counselors and outreach programs for high school and community college students



National Center for Next Generation Manufacturing

Goals:

- Develop a national manufacturing leadership network
- Create an advanced manufacturing education repository
- Provide Faculty and instructor professional development
- Improve the image of advanced manufacturing
- Provide resources and strategies to develop a diverse workforce
- Partners:
 - College of the Canyons (CA)
 - Columbus State CC (OH)
 - Central CC (NE)
 - Indian River State College (FL)
 - Manufacturing Extension Partnerships (MEPS) with FLATE
 - Diversity Consultants
 - Manufacturing USA Institutes
 - NST ATE National Centers and Projects
 - Industry - including professional associations and organizations using the BILT model to ensure engagement



Contact:

Dr. Karen Wosczyzna-Birch

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Fostering partnerships and pathways to educate the advanced manufacturing workforce.

National Center for Next Generation Manufacturing Technology Teams

1. Design Team

CAD: 2D/3D & Blueprint Reading
Additive Manufacturing
Laser Scanning/ Reverse Engineering

2. Fabrication Team

CNC Machining/Precision Machining/ Assembly/Metal forming
Welding

3. Processing Team

Mechatronics/Robotics/Automation
Industrial Maintenance
Instrumentation/ Plastics
Laser & Fiber Optics
Biomanufacturing

4. Supply Chain, Logistics & Quality Control Team

Metrology, Process Control
Supply Chain & Logistics

5. Industry 4.0 Team

Virtual & Augmented Reality
Smart Manufacturing/Big Data/AI/Machine Learning
Internet of Things/Communications Protocols
Cybersecurity

Academic Teams with Industry
Professional Skills
Mentoring

Contact:

Dr. Karen Wosczyzna-Birch

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AWS



Careers in Welding Webinar

March 18, 2022

Next Generation Webinar Series

Presented by:

Joe Young Sr. Mgr. Workforce Development- AWS Foundation

Tim Baber Welding Faculty CWI/CWE College of the Canyons

Agenda



Welding Career Outlook

- Welding Career Opportunities
- Welding Occupational Outlook
- National Demand
- Career Pathways



Starting Your Career

- Training & Education
- Apprenticeship
- Internships
- Welding Competitions



Growing Your Career

- Career Advancement
- Certification
- American Welding Society



AWS Foundation Resources

- Careers in Welding
- Mobile Exhibit
- Scholarships

Welding Workforce Outlook & Projections

What Does a Welding Career Look Like?

In-Demand Opportunities

A career in welding encompasses a variety of occupations- this is because welders and welding professionals use the skill of welding to join materials in our everyday lives.

Here is a look at few occupations where welding or welding knowledge is an essential skill that is used in day-to-day work:

1. Welder Fabricator
2. Pipeline Welder
3. Boilermaker
4. Ironworker
5. and many more!



It is projected that over 300,000 welding professionals will be needed by 2024.

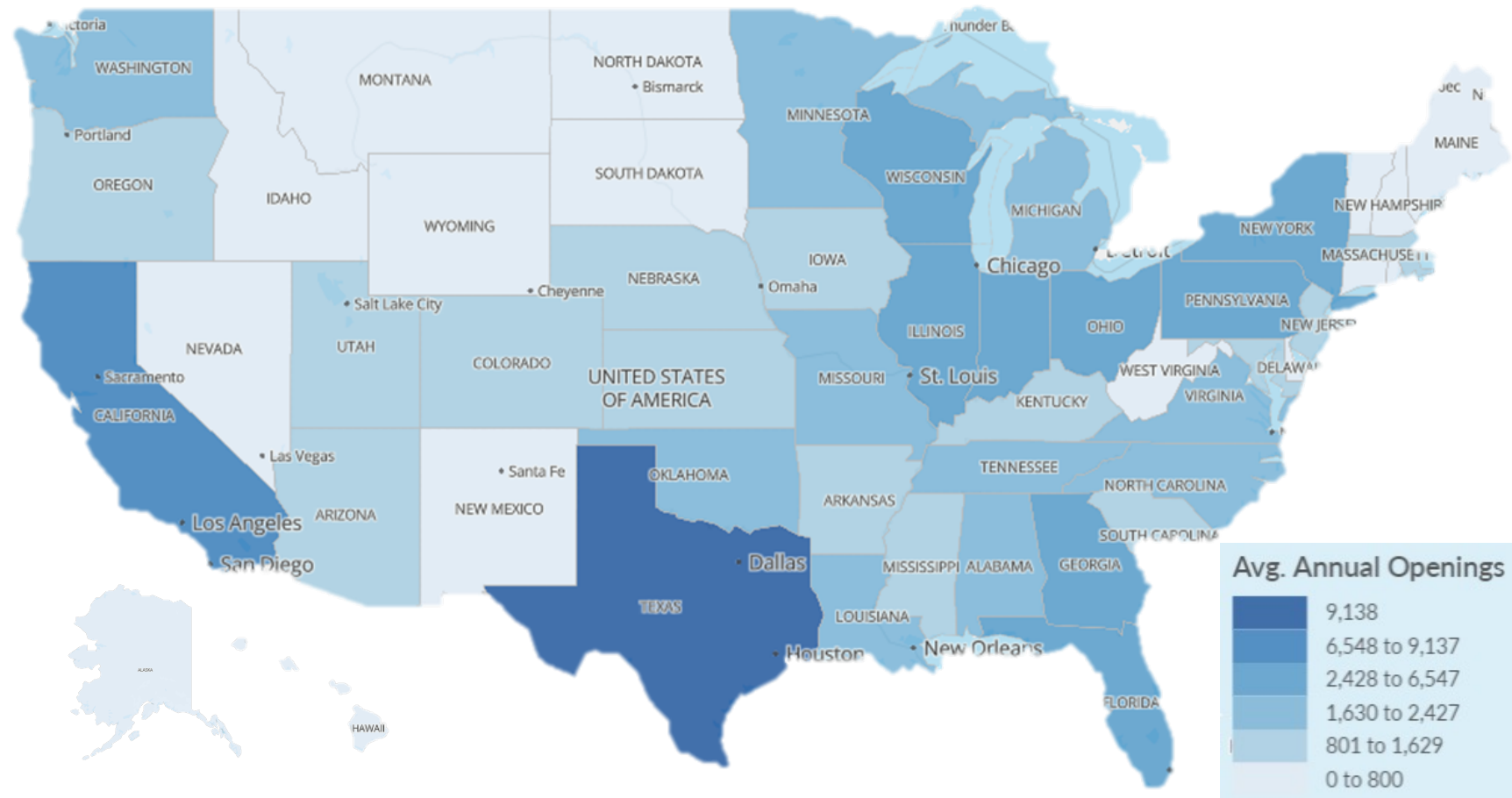
Why the need?

Industry growth (increased supply of jobs) + Anticipated attrition (professionals retiring, advancing, changing industries, etc.) = Projected openings

Did you know?

Average welding jobs to be filled annually between 2022-2024 are projected to be around 76,000 across the U.S.

Visit weldingworforcedata.com for more information.



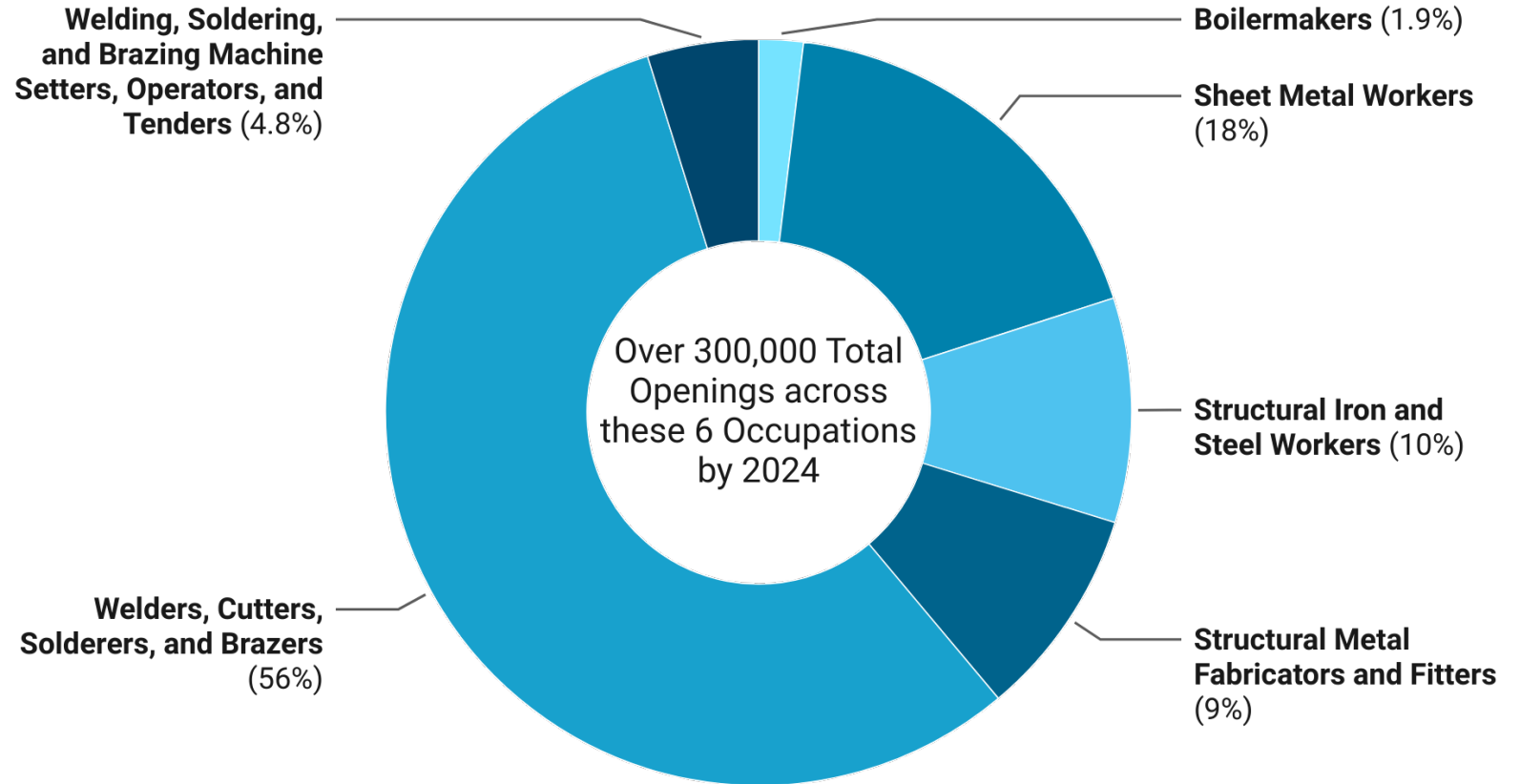
Highlighted above are U.S. states and their respective average annual welding occupation openings. Source: EMSI 2021- Labor market Modeling

Occupational Breakdown and Projections

What counts as a welding professional?

The AWS combines six occupations (defined by the Bureau of Labor Statistics) where welding is considered to be a primary job function which include:

1. *Boilermakers*
2. *Sheet Metal Workers*
3. *Structural Iron and Steel Workers*
4. *Structural Metal Fabricators and Fitters*
5. *Welders, Cutters, Solderers and Brazers*
6. *Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders*





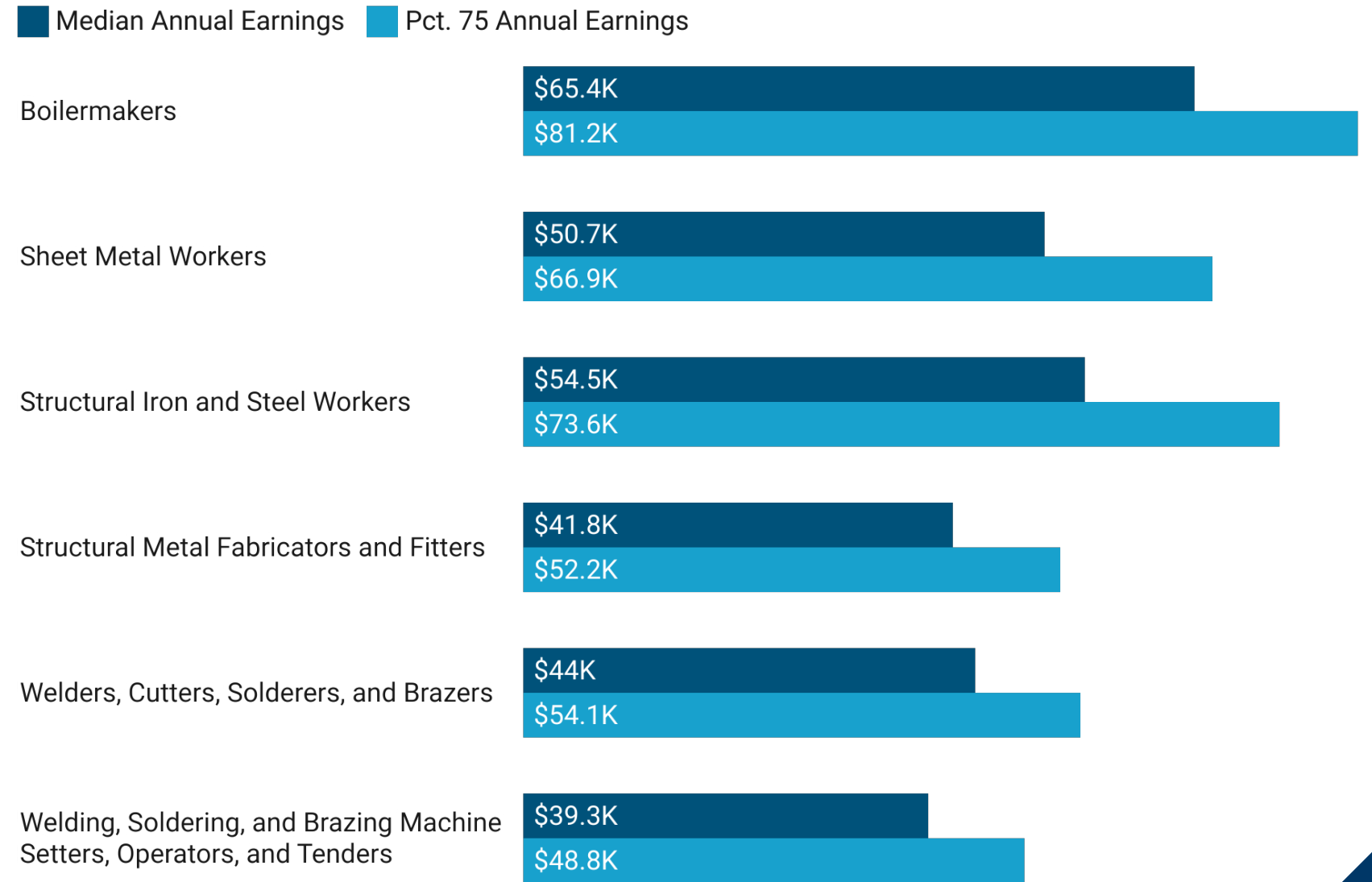
Compensation and Salary- U.S. Median

Annual Salary by Occupation:

It is important to note that these salary figures are the median annual earnings across the U.S. and salary figures vary regionally.

What about Hourly Rate?

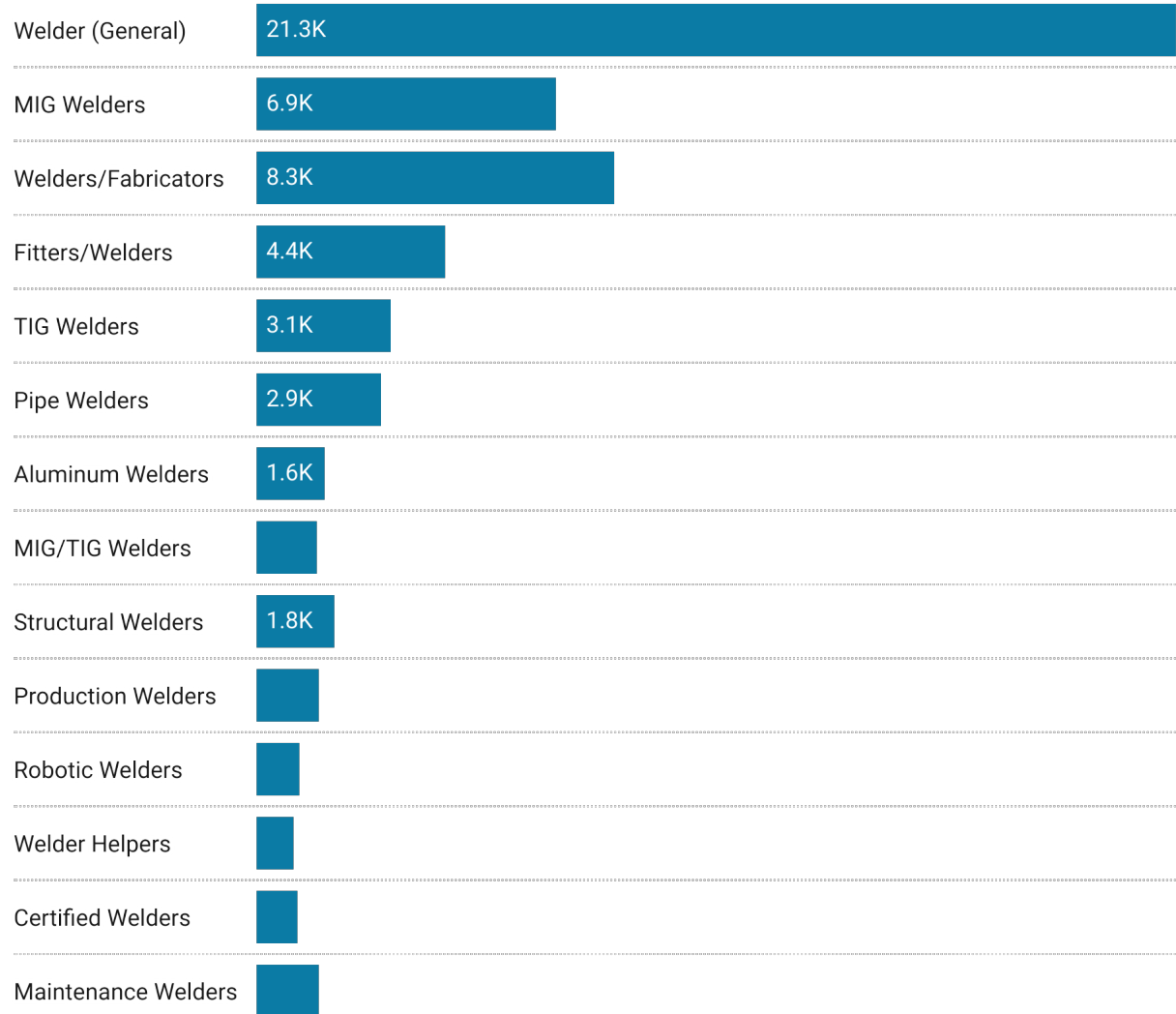
The current average hourly wage for the shown occupations combined is \$23.76





Welders in Demand by Skill/Specialty

Shown is a breakdown of job postings by title corresponding to a significant skill base or specialty



Source: EMSI 2021

Created with Datawrapper



Starting Your Career in Welding

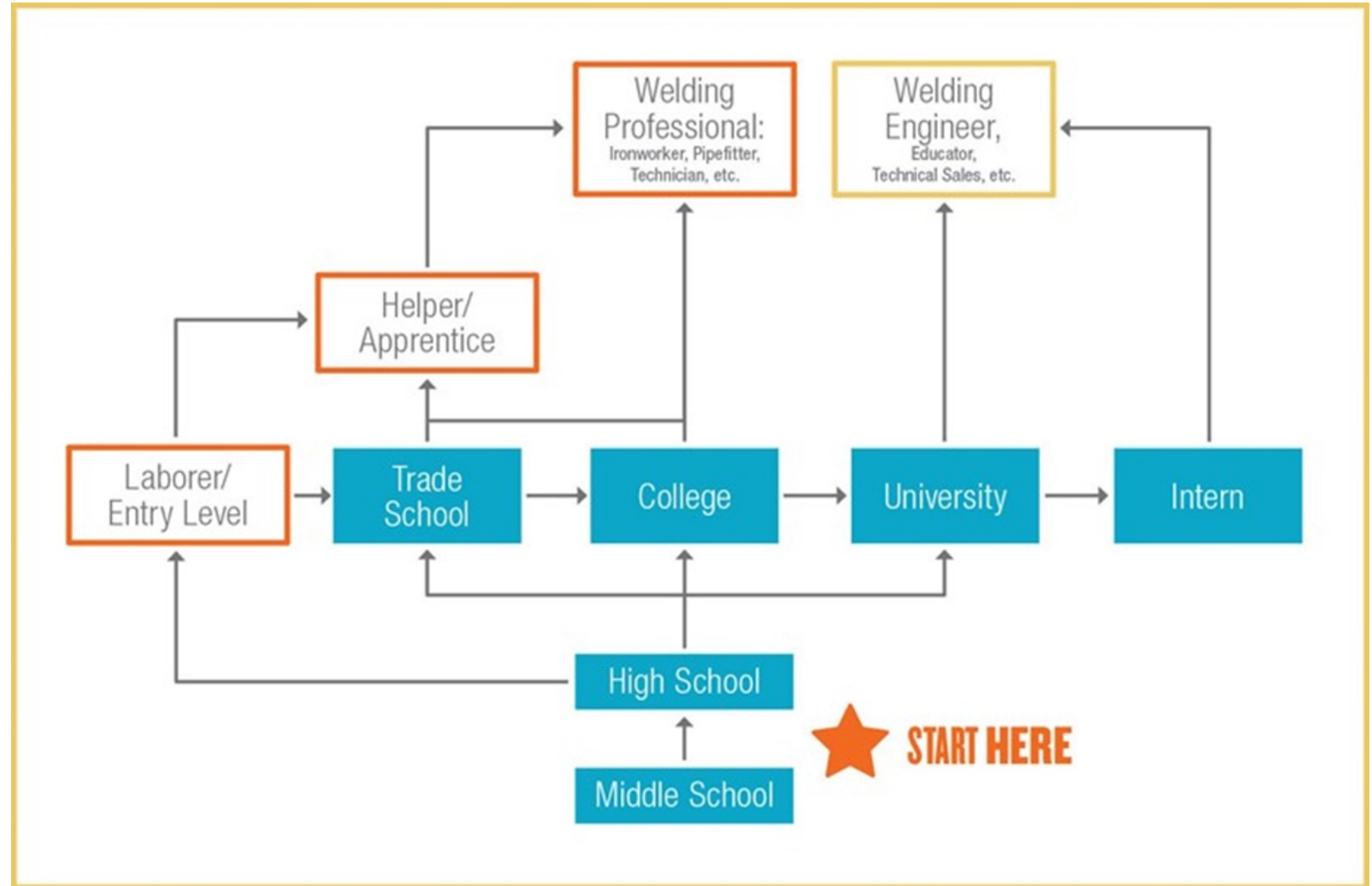
How do I get started?



Where to Start

Starting a career in welding typically begins with some form of formal training or education, which is often a combination of hands on and theory-based learning.

Of course, there surely are a variety of ways in which that training can be accomplished and its important to note that whichever path you choose a successful career in welding lies ahead. Let's look at few common ways to get your start!



High School

Completing your high school education and earning a diploma is arguable one of the most important steps for a successful career!

If your high school offers courses or has a program that teaches welding you can begin training during your high school education, this can be very beneficial in many ways!

Learning welding in high school may also help you land an internship, an after school job, opportunity to earn college credits, and much more!



WELDING can be a career you start
within **A YEAR** of graduating.

Vocational or Technical School

Outside of a high school education one of the fastest ways to become a welder is by attending a technical school and earning a welding certificate.

This program focuses on only what you need to know for a career in welding and typically takes a year or less to complete.

Upon completion most welding schools will have you trained with the right skills to successfully pass common welding qualifications needed to gain employment.

A welding certificate program can take **only 6–18 months to complete.**

The average technical school program **COSTS \$33,000, LESS THAN A SINGLE YEAR OF TUITION** at many private universities.

Junior College or Community College

Many community/junior colleges offer two-year welding programs that allow you to earn an associate degree.

You'll learn all the skills and techniques that you would at a technical school, but you'll also take general studies or related classes such as print reading, metallurgy or welding theory.

Having an associate degree can make you more marketable when looking for a welding job, or help you make more money.



Combining your welding skills with certain **COLLEGE DEGREES** can open the door to rewarding **CAREER OPPORTUNITIES.**

University

If you're interested in the science or engineering side of welding, then you may want to consider pursuing a bachelor's degree at a four-year college.

Depending on the program, you will gain the same hands-on knowledge as the two-year associate degree route, along with additional education on the science of metal, engineering, computer-aided design, robotics and more.

Once you earn a welding-related bachelor's degree, employers will consider you for high-paying jobs in management, engineering or technical sales.



As a welding engineer,
you can **MAKE THE WORLD**
A SAFER PLACE and enjoy
A REWARDING CAREER.

Apprenticeship

An apprenticeship is unique because it provides training, an entry-level position and a path for advancement – all in one. In welding, apprenticeships are usually offered through trade associations within ironworking, pipefitting or boilermaking.

Depending on the program, it can take three to five years to complete and includes both classroom and hands-on instruction. While training on the job, an apprentice gets paid and works alongside an experienced welder to learn the ins and out of the trade.

Most apprenticeship programs are 3 to 5 years in length and successful completion nets you a Journeyman/Journeywoman credential.



Welding training is available through **TECHNICAL SCHOOLS, COMMUNITY COLLEGES,**
— and —
APPRENTICESHIPS.

Learn how to start your career in
1 TO 4 YEARS.

Education and Earning Potential Comparison

Student
A

ATTENDS UNIVERSITY, earns a bachelor's degree in **4 YEARS**

Average cost of completing a BACHELOR'S DEGREE: **\$127,000** || AVERAGE STUDENT DEBT: **\$30,000**

AVERAGE SALARY with a bachelor's degree: $\$49,900 \times 6 \text{ years} = \$299,400$ | **\$172,400**

Total return on investment over 10 years **^**

Student
B

ATTENDS TECHNICAL SCHOOL, earns a welding certificate and passes the AWS Certified Welder test in **18 MONTHS**

AVERAGE COST OF COMPLETING A TECHNICAL SCHOOL PROGRAM: **\$33,000** || AVERAGE STUDENT DEBT: **\$10,000**

AVERAGE SALARY OF A WELDER: $\$44,000 \times 8.5 \text{ years} = \$374,000$ | **\$341,000**

Total return on investment over 10 years **^^**

v.



Growing Your Welding Career

Exploring pathways to grow within the Welding Industry

Long-term Opportunities in the Welding Industry

Just like in the corporate world, ambitious welders can gain experience to bolster their resume, build specialty skills and obtain more senior-level roles.

Let's look at few ways you can climb the ladder in the welding field.

*Just like in the corporate world,
ambitious welders
can build their resume and skills to*

**ADVANCE THEIR
CAREERS.**

Earn Professional Certifications

At any point in a welder's career, there are opportunities to earn advanced certifications through the American Welding Society (AWS). These certifications can help your child specialize in a type of welding or transition to a different position later in their career.

- **Certified Welder** – Provides proof of knowledge and skills in a widely used welding practice
- **Certified Robotic Arc Welding** – Demonstrates understanding in both welding principles and operation of advanced robotics and automation equipment
- **Certified Welding Supervisor** – Prepares a professional to oversee welding operations at a company and manage a team of welders
- **Certified Welding Inspector** – Evaluates welds to ensure the work meets standards for quality and safety
- **Certified Welding Educator** – Enables a professional to instruct welding students at a technical school or community college
- **Certified Welding Sales Representation** – Distinguishes a sales professional by providing the most knowledgeable product and technology recommendations



Specialize in a High-Paying Industry

Welding is an industry where the more you know, the more you can advance your career. Getting involved in a challenging specialty such as welding and fabricating with exotic materials such as titanium, Inconel, or Hastelloy can be a surefire way to land high-paying jobs.

There are also specific industries and jobs that are especially lucrative, including pipeline welding, underwater welding and boilermaking, just to name a few.

In fact, the opportunity of exploring your own business or welding service is an excellent option.



Combining Welding Experience with a 4-year Degree

Being a welder can help you start a career and gives you valuable skills that will always be needed. If your long-term career goal is to reach a certain position or make more money, then earning a four-year degree can be a wise investment in your future.

There are many four-year college degrees that can complement your welding skills to take your career to the next level.

- Welding Engineering
- Business & Management
- Metallurgy
- Education





AWS Foundation Resources



American Welding Society Foundation

Our Mission:

The AWS Foundation achieves its mission through the following programs:

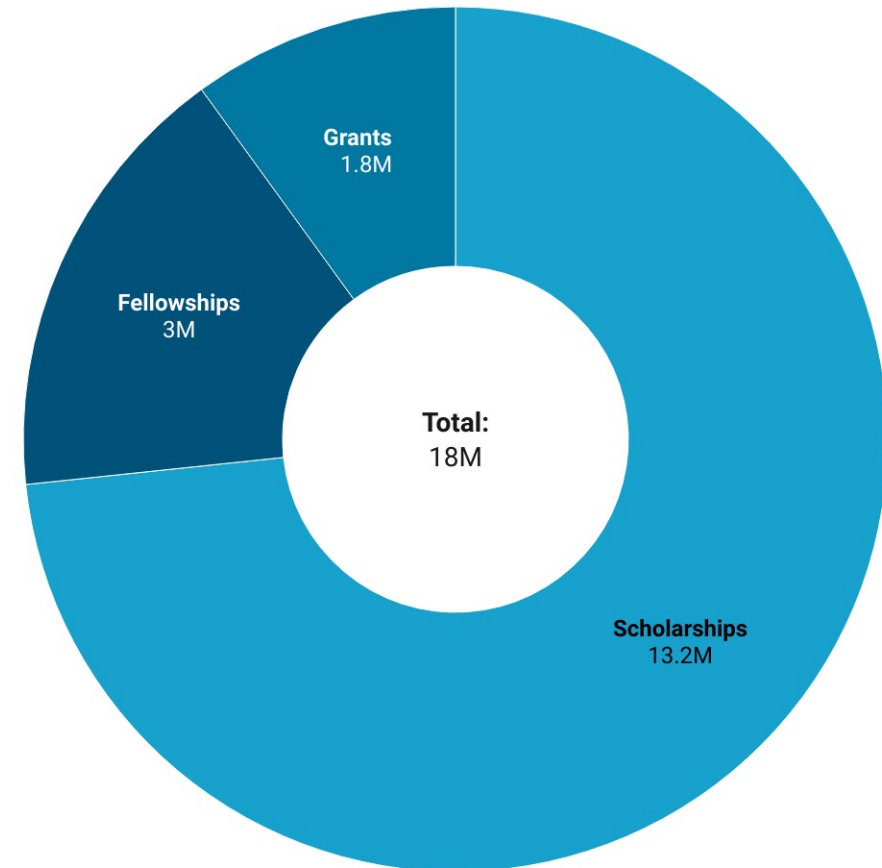
- *Scholarships*
- *Grants*
- *Fellowships*
- *Workforce Development*

In total the AWS Foundation has awarded nearly \$18 Million in Scholarships, Fellowships, & Grants since 1989.

AWS Foundation Overview

Shown are the awarded totals across all AWS Foundation programs since 1989

■ Scholarships ■ Fellowships ■ Grants



Source: American Welding Society Foundation
Created with Datawrapper





American Welding Society Foundation- Scholarships

AWS Foundation Scholarship Programs:

National, District and Section:

Scholarships on the national and local level for students pursuing certificates, two-year degrees and four-year degrees

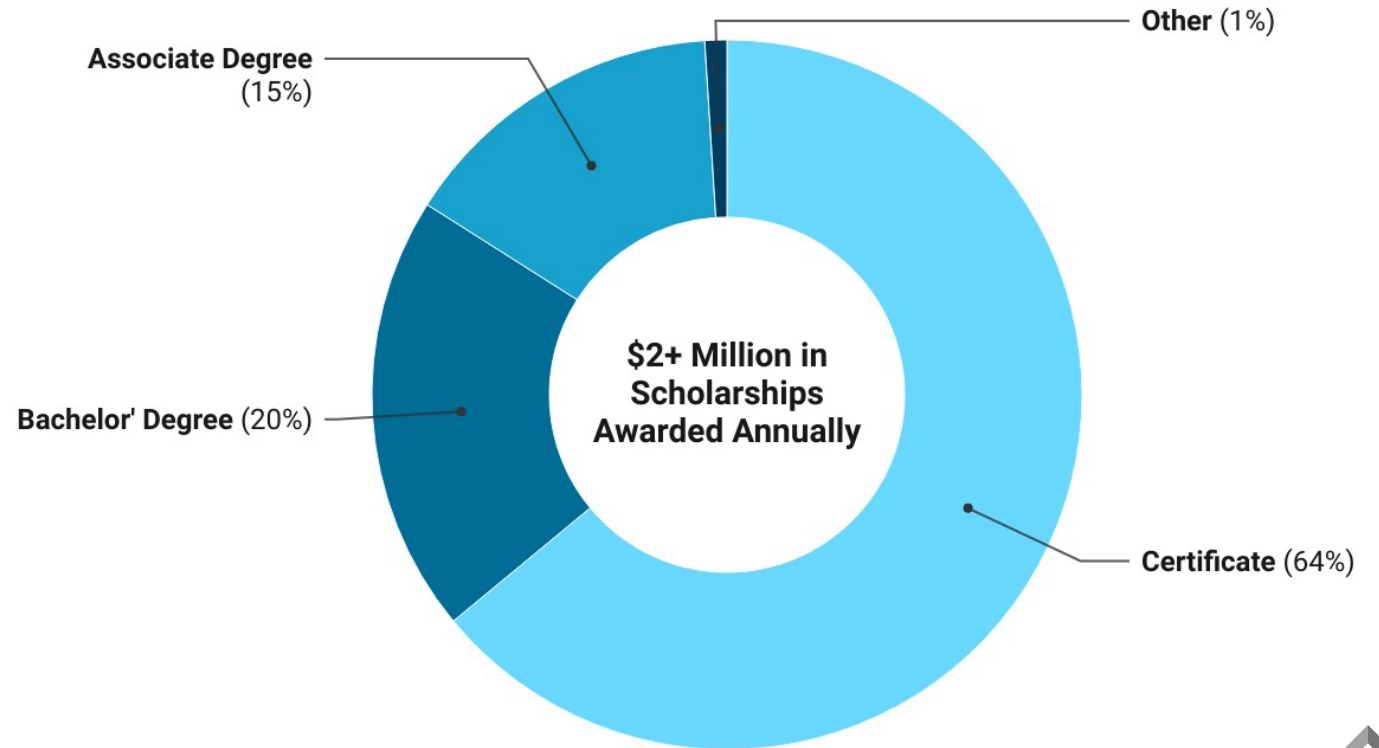
Welder Training Scholarships:

For Students attending welder training certificate programs at a trade/technical school or community college

Learn more at aws.org/scholarships

Welding Education Programs Recipients are Enrolled Into

Shown are the programs by degree/certificate the 2021 scholarship recipients had enrolled into for welding education



Source: AWS Foundation
Created with Datawrapper





American Welding Society Foundation- Scholarship Important Dates

National, District, and Section Scholarships

Important Dates	
December 1st	Applications open for 2021-22 Scholarships Apply online at scholarship.aws.org
March 1st	Deadline to apply for National, District, and Section Scholarships
May-June	Selections made for National and District Scholarships
May-July	Selections made for Section Scholarships

Welder Training Scholarships

Important Dates	
December 1st - November 30th	Applications accepted for 2021-22 Welder Training Scholarships Apply online at scholarship.aws.org
January 15th - December 15th	Selections made on a rolling basis



Welcome Message Center FAQ Joe Young ▾

Welcome Joe

Welcome to the scholarship application system for the American Welding Society. The AWS Foundation awards over \$1 million in scholarships annually for education and training in welding and related fields!

There are steps to complete the application process:

- Step 1:** Academic Profile, which includes your Personal Statement Questions. You may edit your Personal Statement responses at any time prior to the application deadline.
- Step 2:** Your Scholarship Opportunities. Be sure to answer all required questions for each scholarship and make sure each is marked as Submitted.
- Step 3:** Provide references and any required documentation to complete your applications.

Some scholarships are based on the AWS District or Section in which you reside. View the [AWS District and Section Map](#) to see which District and Section you are in.

The following Districts are no longer accepting Welder Training Scholarship applications:

- District 2
- District 8
- District 11
- District 16
- District 22

Application Progress

- 1 Academic Profile
- 2 Parent/Guardian Details
- 3 Scholarship Opportunities
- 4 Additional Documentation

Step 1: Complete Academic Profile

Academic Profile	In Progress
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About the American Welding Society Foundation

The AWS Foundation is a not-for-profit 501(c)(3) charitable organization. It supports programs to ensure the growth and development of the welding industry through research and educational opportunities. Our industry depends upon education that prepares the next generation to meet the challenges ahead.

Our Scholarships

Questions? Learn more about the [AWS Foundation Scholarships](#).



Welding Educator Professional Development Scholarships

The AWS Foundation offers four National Educator Scholarships, ranging from \$2,500 - \$4,500. Additionally, each AWS District has an award pool of \$2,000, and scholarships may range from \$500 to \$2,000.

- Deadline to apply is **April 1**.

Eligibility:

- Applicants must be current, full-time or part-time welding educators.
- Applicants must be an educator at a public or private organization that's primary purpose is education and training.
- Applicants must be pursuing continuing education or professional development that is required for continued employment or is meant to improve education or training skills to significantly impact student success and outcomes.
- Scholarship funds may be used for in-person or online courses.

Learn more at aws.org/scholarships





American Welding Society Foundation- Workforce Grants

AWS Foundation Workforce Grants Programs:

Welding Workforce Grants-

To help ensure the future of the welding industry- grants of up to \$25,000 are available for schools to expand and improve welding training programs.

Light A Spark Grant:

The Light a Spark Grant provides a starter package of equipment and supplies to introduce welding into a high school that currently does not offer a welding course. Packages valued at more than \$10,000

Deadline to apply is April 1st

Learn more at aws.org/workforcegrant

American Welding Society Foundation Grant Recipients

Shown are all AWS Foundation grant recipients since 2017. Over \$1.3 Million has been awarded to date.

Funding Year

2017 Grant Recipient 2018 Grant Recipient 2019 Grant Recipient 2020 Grant Recipient 2021 Grant Recipient



Map: American Welding Society • Source: AWS Foundation • Created with Datawrapper



CareersinWelding.com

CareersinWelding.com continues to be the go-to source for those aspiring to enter the welding field, and for those assisting others to achieve their dreams.

The site, which highlights 15 unique welding careers, with information on pay, geographic demand, and education requirements, also features pages dedicated to:

- Welding Scholarships
- Veterans
- Educators
- Welding School Locator
- Articles and Videos
- Competitions

The collage displays three key pages from the CareersinWelding.com website:

- Welding School Locator:** A search interface for finding welding schools, featuring a search bar for state or zip code, a radius selector (set to 50 miles), and a map of the United States.
- Good Jobs. No Cubicles:** An article promoting welding careers, featuring a welder in a black jacket and helmet. The text encourages developing skills to make good money working with hands.
- Educator Resources:** A page providing information about the AWS Safety in Welding Course, which is now free. It includes details about the course content (ANSI Z49.1 National Standard, Safety & Health Fact Sheets, 11 Modules with Pre & Post Quizzes) and links to access Metallurgy and Joining & Cutting Processes modules.

CIW Educator Resources

Understanding the educational landscape is dynamic and constantly evolving, we have created this page to provide a variety of resources for welding instructors and efforts with the preparation of students and the journey to a career in welding, including:

- Video & Training Resources
- Printable Classroom/Shop Career Visuals
- E-Learning Materials

Welding Career Profile Cards

Now available for download and print! These 8.5" by 11" career cards feature eight different welding career profiles all highlighting key information about the commonly required types of skills, education, credentials, and more. These profile cards are a great edition to the classroom, career day events, and more!



Career Profile Cards for Download & Print Here! >

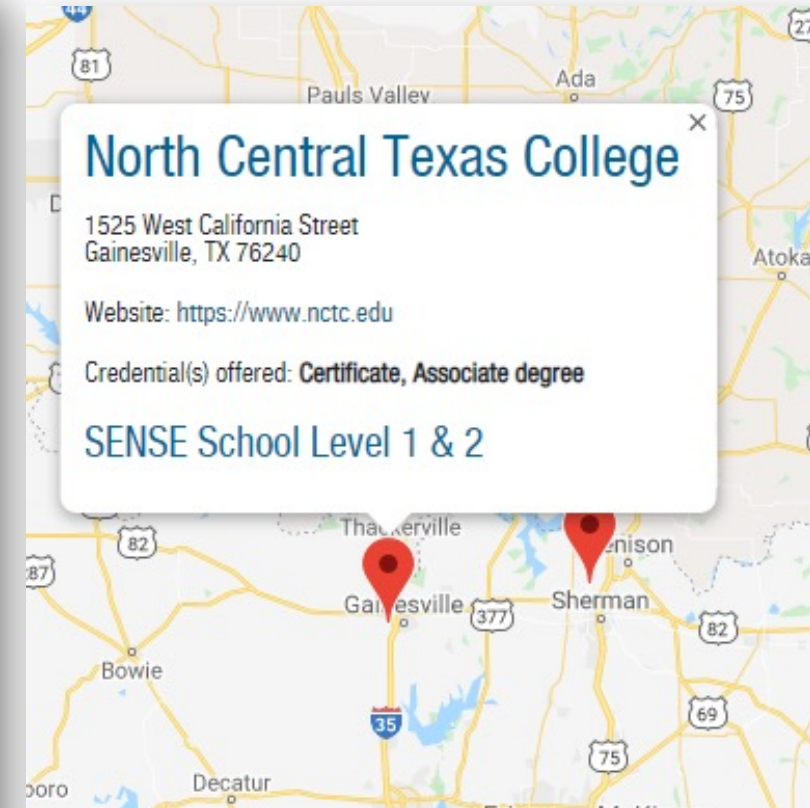
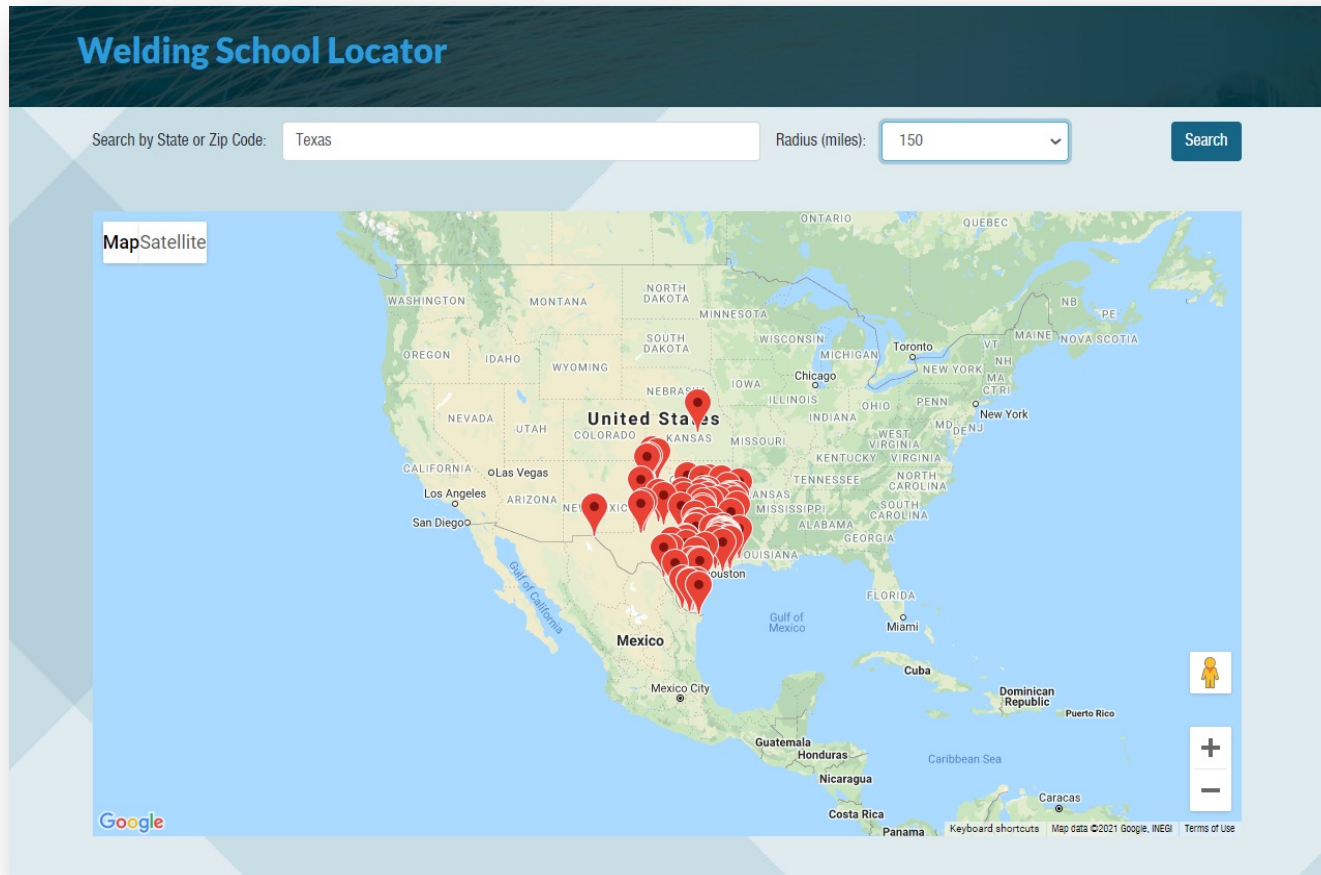
EXPLORE-
VIDEOS & TRAINING RESOURCES

DOWNLOAD & PRINT-
WELDING CAREER POSTERS & VISUALS

ACCESS-
E-LEARNING, CURRICULUM & ONLINE
MATERIALS

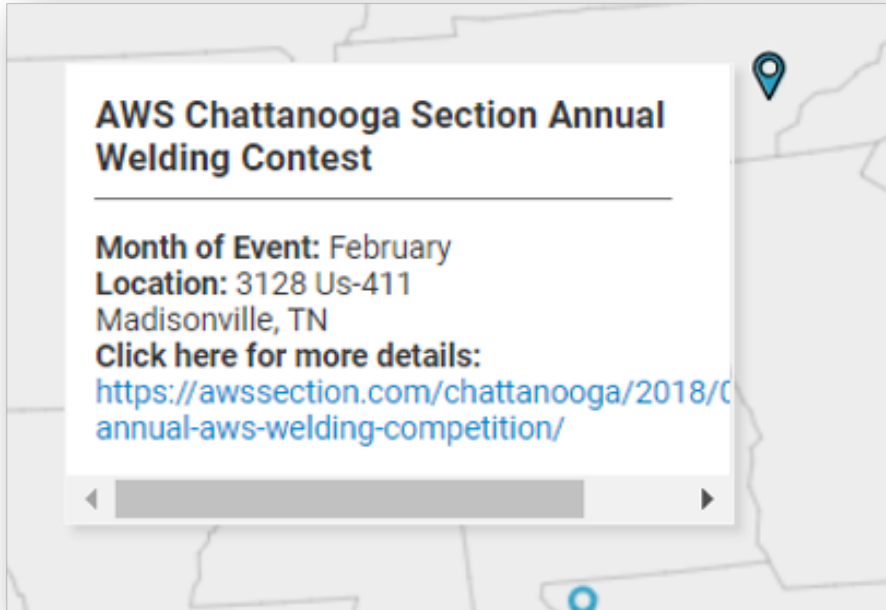
CIW- Welding School Locator

Search over 1,200+ schools by state or zip code on the school locator tool map to find training programs, technical schools, colleges & universities near you that offer welding related programs. Only available at [Careersinwelding.com](https://careersinwelding.com)!



CIW- Welding Competition Map

Welding competitions are certainly an iconic event within the welding community. Careersinwelding.com has a resource that lets visitors explore an interactive map that highlights welding competitions by state.



AWS Chattanooga Section Annual Welding Contest

Month of Event: February
Location: 3128 Us-411
Madisonville, TN
Click here for more details:
<https://awssection.com/chattanooga/2018/annual-aws-welding-competition/>



Welding Competitions

Find a Welding Competition Near You
Check out these annual welding competitions held across the U.S.

AWS
American Welding Society
FOUNDATION

Career & Education Focused Content:

The online resource is designed to provide awareness around welding career opportunities with key messaging to audiences that include:

- *Students*
- *Parents*
- *Career Changers*
- *Veterans*

YOUR TIME IS NOW.
TAKE *the* TORCH.
 Become an AWS member today to lead the next generation of welders.

[Learn More](#)

FEATURED

American Welding Society Launches “AWS Certified” to Bring Awareness to Younger Workforce

BY AWS PUBLICATIONS IN AWS NEWS AND CALENDAR



Latest

May 19, 2021

American Welding Society Launches “AWS Certified” to Bring Awareness to Younger Workforce

May 17, 2021

Hypertherm Awards 2021 Educational Grants to 12 North American Schools

May 14, 2021

Interested in Becoming an Engineer? Here’s Why You Should Consider Welding Engineering

May 11, 2021

Three Tips for Accurate Weld Analysis Using Handheld XRF

May 7, 2021

Project MFG’s National Challenge: Clash of Trades

May 4, 2021

Four New Products for the Metal Pipe and Tube

JobsInWelding.com

The welding focused job board platform offers a variety of key features for both employers looking to hire and those seeking employment. Jobsinwelding.com offers:

- Welding position/job posting opportunities
- Free resume review
- Career planning tool

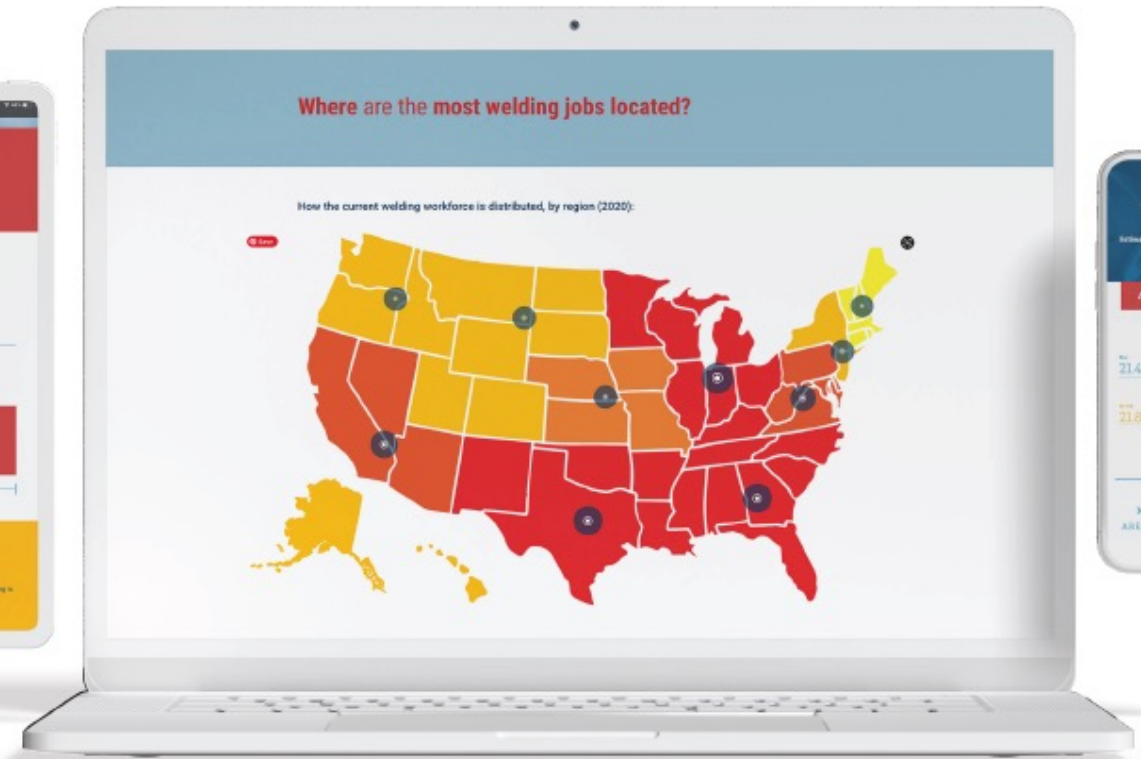
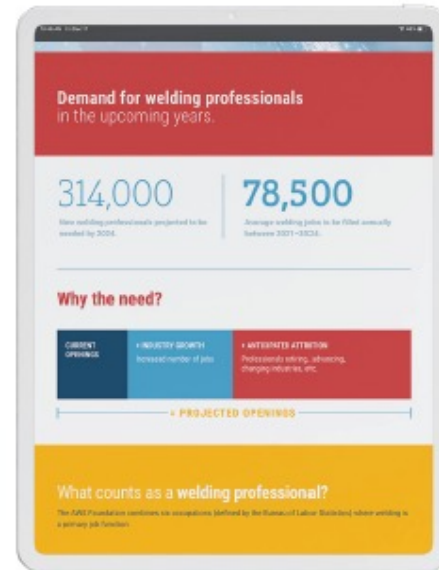
WHY YOU SHOULD VISIT
JOBSINWELDING.COM

 Connect with Employers	 Free resume review
 Career Planning Tool	 Hire talent

Weldingworkforcedata.com

Through engaging graphics and interactive elements, WeldingWorkforceData.com shows projected welding needs and welder opportunities. The website includes:

- National median salaries for various welding careers
- Job demand by U.S. region
- Top welding skills in demand
- Education costs
- And much more.



ARCademy Youtube Series

AWS ARCADEMY Videos provide resources for those interested in taking the steps to educate themselves about welding and the skills needed across multiple careers in the industry.

Explore the series on YouTube Today!

YouTube

Search



#AmericanWeldingSociety #weldingisAWSome #ARCademy
ARCademy: PPE



Your source for easy-to-follow welding training is here with the **AWS ARCADEMY** video series.

SUBSCRIBE TODAY

Careers in Welding Mobile Exhibit Tour

Since 2011, the AWS Careers in Welding Trailer has been a driving force for welding education and career development.

The 53-foot single-expandable trailer provides visitors with a unique learning experience. Its wide array of hands-on exhibits engages the senses and sparks an interest in the welding industry.

Annually, Careers in Welding Tour includes event visits across the U.S. continuously for 18 weeks! To view this years tour and events visit Careersinwelding.com



Kane County Fair

July 14th - 18th

St. Charles, Illinois



North Dakota State Fair

July 23rd - 25th

Minot, North Dakota



Cheyenne Frontier Days

July 29th - August 1st

Cheyenne, Wyoming



Iowa State Fair

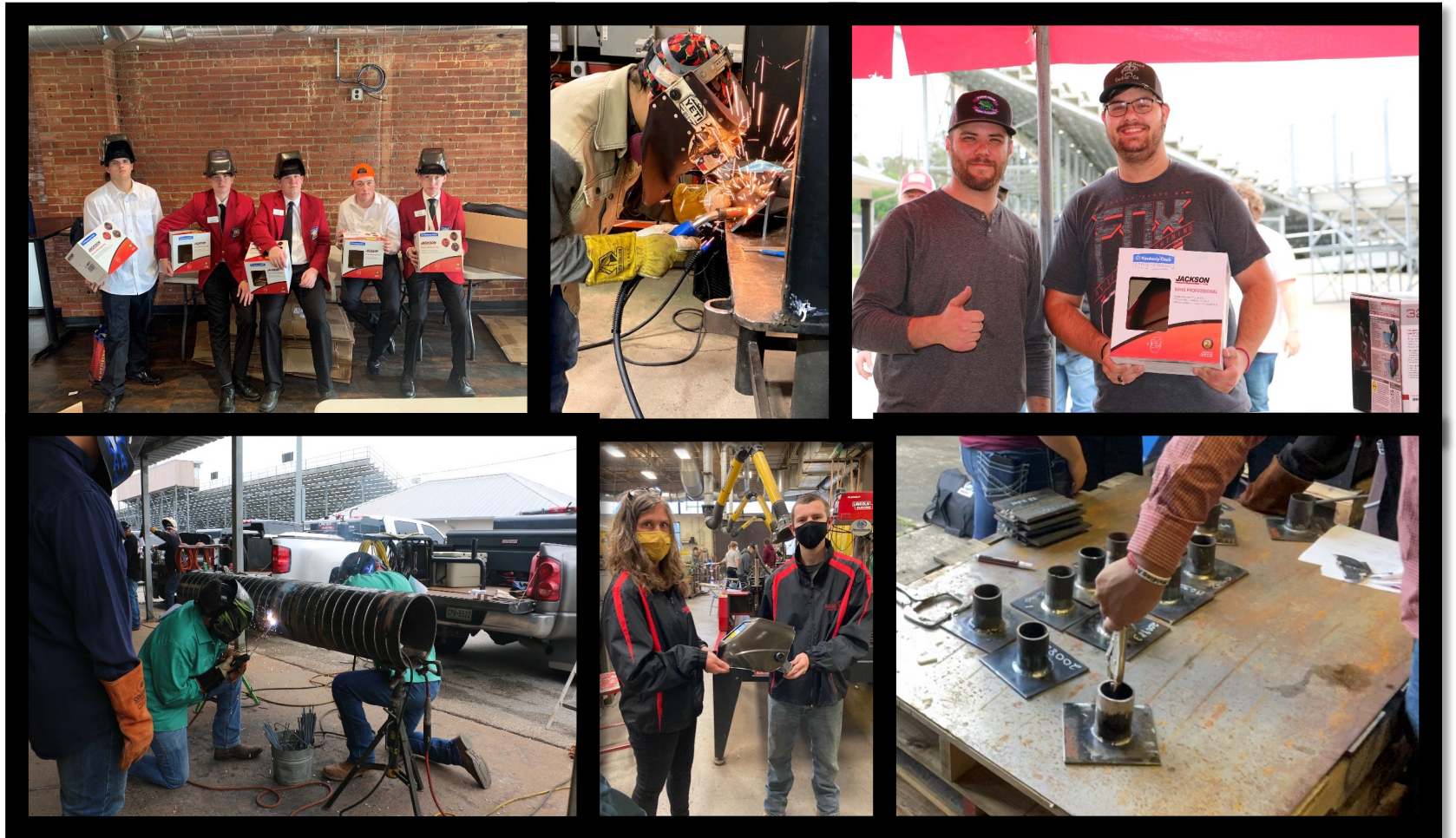
August 12th - 15th

Des Moines, Iowa

Helmets for Welding Competitions & Student Chapters

The AWS Foundation has launched a donation program that allows welding competition or student event hosts to apply for welding helmets that can be used for prizes.

Supplies are limited and applications can be submitted at www.careersinwelding.com/helmet-request-form/.



Submit a contest today: <https://www.careersinwelding.com/helmet-request-form/>



Questions?



THANK YOU

aws.org



Upcoming Webinars

April 22 – Lasers

May 20 – Industry 4.0

[Recordings
available for past
webinars](#)



Who should attend?

- High school and community college educators and career counselors
- Educators interested in starting an advanced manufacturing program
- Educators interested in National Science Foundation Advanced Manufacturing Education grant opportunities

WEBINAR SERIES for EDUCATORS

CAREERS & TRENDS IN ADVANCED MANUFACTURING

Presented by the
National Center for
Next Generation Manufacturing

This webinar series will provide an overview of trends and career opportunities in the many areas of advanced manufacturing.

WEBINAR DATES

Webinars will begin at 1:00PM EST

Friday, February 11, 2022
Supply Chain

Friday, February 25, 2022
Mechatronics

Friday, March 18, 2022
Welding

Friday, April 22, 2022
Lasers

Friday, May 20, 2022
Industry 4.0

REGISTER

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